

[0157] To detect a “hand edge gesture,” either a touch sensor panel with some hover detecting capability or a touch sensor panel co-located with a proximity sensor panel can be employed. FIGS. 27a and 27b illustrate a right hand 2700 beginning a general “hand edge gesture” over one or more UI elements 2710 appearing beneath sensor panel 2702 according to embodiments of this invention. In FIG. 27b, the image of actual touch 2704 may not look like a “hand edge gesture” at all, because only the user’s “pinkie” finger and palm edge may actually make contact with the sensor panel. Images 2704 can together be converted into a single feature as described above.

[0158] FIG. 27c shows image of touch 2704 as the right hand edge is swept towards the user’s body. FIG. 27c shows intermediate touch images 2706 and 2708, although it should be understood that a number of intermediate touch images 1900 are generated as the right hand edge is swept. FIG. 27d shows an alternative in which the right hand is initially placed down in a horizontal position, creating touch image 2710, and then swept away from the user, creating intermediate touch images 2712 and 2714. FIG. 27e shows another alternative in which the right hand is initially placed down in a horizontal position, creating touch image 2716, and then moved away from the user while maintaining the horizontal orientation, creating intermediate touch images 2718 and 2720. FIG. 27f shows yet another alternative in which the right hand is initially placed down in a horizontal position, creating touch image 2722, and then moved toward the user while maintaining the horizontal orientation, creating intermediate touch images 2724 and 2726. FIG. 27g shows yet another alternative in which the right hand is initially placed down in a vertical position, creating touch image 2728, and then moved to the right while maintaining the vertical orientation, creating intermediate touch images 2730 and 2732. FIG. 27h shows yet another alternative in which the right hand is initially placed down in a vertical position, creating touch image 2734, and then moved to the left while maintaining the vertical orientation, creating intermediate touch images 2736 and 2738. FIG. 27i shows yet another alternative in which the right hand is initially placed down in a vertical position, creating touch image 2740, and then moved up and down in a “sawing” motion while maintaining the vertical orientation, creating intermediate touch images 2742 (shown time-elapsing at times T1-T5 and visually separated for clarity—note that there can be no actual horizontal motion in the gesture). FIG. 27j shows yet another alternative in which the right hand is initially placed down in a vertical position, creating touch image 2744, and then only the pinky and one or more of the other non-thumb fingers are partially curled or brought perpendicular to the thumb, creating intermediate touch images 2746 and 2748. FIG. 27k shows yet another alternative in which the right hand is initially placed down with the palm in a vertical position and fingers partially curled or perpendicular to the thumb, creating touch image 2750, and then only the pinky and one or more of the other non-thumb fingers are straighten to vertical, creating intermediate touch images 2752 and 2754. In a “flick off” embodiment, the pinky made end up not touching the sensor panel, in which case intermediate image 2754 would not be present.

[0159] If the images and corresponding features are tracked over time, the completion of various “hand edge gestures” can be accurately detected. At that point, one or more UI elements appearing on the touch screen at the time the gesture was detected can be associated with the “hand edge gesture.” After

a particular “hand edge gesture” has been detected and the corresponding UI elements have been associated with the gesture, various actions can be taken with regard to the associated UI elements. For example, the detection of a hand edge gesture, without more, can be used to quickly “orient” an application or control along the elongated axis defined by the orientation of the touch image. A rotational sweep of the touch image from vertical to horizontal, can be used to “sweep away” the UI elements, or dismiss the normal desktop to bring up alternative desktops, switch users, lock the screen, and the like. A sweep from horizontal to vertical, a straightening of fingers to vertical, or a flicking action can be used to reverse the operation, e.g. resume normal desktop/workspace. Sweeping the touch image from left edge to right edge can be used to perform an erase operation (e.g. clear a drawing), switch to a workspace or virtual desktop on the right, or perform a continuous redo (or forward on a timeline). Sweeping the touch image from right edge to left edge can be used to switch to a workspace/virtual desktop on the left or perform a continuous undo (or backup on a timeline). For instance, in a drawing application, these gestures could undo/redo one pivot point at a time on drawn paths, polygons or bezier curves. Sweeping from top to bottom edge or vice versa can similarly clear a drawing, switch workspaces, users, or virtual desktops, or hide an application or UI element, while sweeping from bottom to top can be used to maximize the application or UI element. “Sawing” the gesture up and down can be used to vertically split the window or view.

[0160] FIGS. 28a-28b illustrate an exemplary “framing gesture” according to embodiments of this invention. A “framing gesture” formed by one or both hands over a touch or hover sensitive device can be detected and interpreted to perform operations requiring definition of a certain area.

[0161] FIG. 28a illustrates an exemplary orientation of hands 2800 giving a “framing gesture” over area 2802 according to embodiments of this invention. FIG. 28b shows the image of actual touch 2806, which can be roughly the shape of an upside-down U. After the detected image 2806 has been converted to one or more features and classified and grouped as a “framing gesture,” parameters for the feature can be computed, such as an approximate window or area 2802 framed by the “framing gesture,” and appropriate action can then be taken. Framed window 2802 can be used to open a detail portal, magnifier, or dialog, or place a photo, for example.

[0162] In any of these exemplary identification gestures, the images can be converted to features, which can then be classified, grouped and interpreted as an identification gesture. Each identification gesture can then be associated with a particular user and UI element for which access is sought, and depending on whether access rights have been satisfied, the user may or may not be granted access to the UI element.

[0163] Although the present invention has been fully described in connection with embodiments thereof with reference to the accompanying drawings, it is to be noted that various changes and modifications will become apparent to those skilled in the art. Such changes and modifications are to be understood as being included within the scope of the present invention as defined by the appended claims.

What is claimed is:

1. A method for receiving an affirmative gesture formed on or about a sensor panel, comprising:
 - detecting one or more images at the sensor panel generated from a hand formed in a shape of an OK sign;